

Appl. No. 10/708,606
Corrected Response dated January 18, 2005

Amendments to the Claims

Please amend the claims as follows:

- 1 [C1] (currently amended) A process for preparing syngas, comprising:
2 partially oxidizing a first hydrocarbon portion with oxygen in a partial
3 oxidation reactor to produce a first reactor effluent;
4 cooling the first reactor effluent to a temperature from 650° and to 1000°C;
5 supplying the cooled first reactor effluent to a reforming exchanger;
6 passing a second hydrocarbon portion with steam through a catalyst zone
7 in the reforming exchanger to form a second reactor effluent;
8 discharging the second reactor effluent from the catalyst zone to form an
9 admixture with the first reactor effluent;
10 passing the admixture across the catalyst zone in indirect heat exchange
11 therewith to cool the admixture and heat the catalyst zone;
12 collecting the cooled admixture from the reforming exchanger.
- 1 [C2] (currently amended) The process of claim 1, wherein the first reactor
2 effluent cooling comprises direct heat exchange with water ~~is~~ introduced
3 into the first reactor effluent as a quench fluid.
- 1 [C3] (currently amended) The process of claim 2, wherein the first reactor
2 effluent cooling further comprises indirect heat exchange.
- 1 [C4] (currently amended) The process of claim 3, wherein the first reactor
2 effluent cooling by indirect heat exchange comprises heating the second
3 hydrocarbon portion in a cross exchange.
- 1 [C5] (currently amended) The process of claim 1, wherein the first reactor
2 effluent cooling comprises indirect heat exchange.
- 1 [C6] (currently amended) The process of claim 5, wherein the first reactor
2 effluent cooling by indirect heat exchange comprises heating the second
3 hydrocarbon portion in a cross exchanger.
- 1 [C7] (original) The process of claim 1, wherein the catalyst zone comprises
2 catalyst tubes.

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1 [C8] (original) The process of claim 5, wherein the second hydrocarbon portion
2 is supplied to a tube side of the reforming exchanger and passed through
3 the catalyst tubes.

1 [C9] (original) The process of claim 5, wherein the cooled first reactor effluent
2 is supplied to a shell side inlet of the reforming exchanger.

1 [C10] (original) The process of claim 7, wherein the shell side inlet is adjacent
2 an outlet end of the catalyst tubes.

1 [C11] (original) The process of claim 1 wherein the first and second hydrocarbon
2 portions are supplied in a weight ratio of from 40:60 to 95:5.

1 [C12] (original) The process of claim 1, wherein the first and second
2 hydrocarbon portions are supplied in a weight ratio of from 40:60 to 60:40.

1 [C13] (original) The process of claim 1, wherein the first and second
2 hydrocarbon portions are supplied in a weight ratio of from 95:5 to 80:20.

1 [C14] (currently amended) An apparatus for producing syngas, comprising:
2 partial oxidation reactor means for partially oxidizing a first hydrocarbon
3 portion with oxygen to produce a first reactor effluent;
4 means for cooling the first reactor effluent to a temperature from 650° to
5 1000°C;
6 means for supplying the cooled first reactor effluent to a reforming
7 exchanger;
8 means for passing a second hydrocarbon portion with steam through a
9 catalyst zone in the reforming exchanger to form a second reactor
10 effluent;
11 means for discharging the second reactor effluent from the catalyst zone to
12 form an admixture with the first reactor effluent;
13 means for passing the admixture across the catalyst zone in indirect heat
14 exchange therewith to cool the admixture and heat the catalyst zone;
15 means for collecting the cooled admixture from the reforming exchanger.

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1 [C15] (original) A method for retrofitting a syngas process comprising a partial
2 oxidation reaction step for converting a first hydrocarbon stream to a first
3 reactor effluent, a heat recovery step for cooling the first reactor effluent
4 and producing steam with the recovered heat, and a downstream
5 processing step for receiving the cooled reactor effluent and producing a
6 product syngas of enhanced hydrogen content, comprising:

7 a step for cooling the first reactor effluent to a temperature from 650°
8 to 1000°C.

9 a step for diverting the cooled first reactor effluent to a reforming
10 exchanger;

11 a step for passing a second hydrocarbon portion with steam through
12 a catalyst zone in the reforming exchanger to form a second
13 reactor effluent;

14 a step for discharging the second reactor effluent from the catalyst
15 zone to form an admixture with the first reactor effluent;

16 a step for passing the admixture across the catalyst zone in indirect
17 heat exchange therewith to cool the admixture and heat the
18 catalyst zone;

19 a step for supplying the cooled admixture from the reforming
20 exchanger to the heat recovery step.

21 [C16] (original) The method of claim 15, wherein water is introduced into the first
22 reactor effluent as a quench fluid.

1 [C17] (currently amended) The method of claim 15 44, wherein the first reactor
2 effluent is cooled by indirect heat exchange.

1 [C18] (original) The method of claim 17, wherein the second hydrocarbon
2 portion is heated by indirect heat exchange before being supplied to the
3 reforming exchanger.

1 [C19] (original) The method of claim 17 wherein water is introduced into the first
2 reactor effluent.

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1 [C20] (currently amended) The method of claim 15 44, wherein the catalyst zone
2 further comprises catalyst tubes.

1 [C21] (original) The method of claim 18, wherein the second hydrocarbon portion
2 is introduced to a tube side inlet of the reforming exchanger.